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Occupational Change in Britain and Germany

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OCCUPATIONAL CHANGE IN BRITAIN AND GERMANY

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Abstract
We use British and German panel data to analyse job changes involving a change in occupation. We assess: (1) the extent of occupational change, taking into account the possibility of measurement error in occupational codes; (2) whether job changes within the occupation differ from occupation changes in terms of the characteristics of those making such switches; and (3) the effects of the two kinds of moves in terms of wages and job satisfaction. We find that occupation changes differ from other job changes, generally reflecting a less satisfactory employment situation, but also that the move in both cases is positive in respect of change in wages and job satisfaction.

Keywords: Job change, occupation change, Britain, Germany
JEL Classification: J24, J62

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1. Introduction

Why do some workers change their occupation, that is, the nature of the work they do, rather than simply their job? Some of this movement reflects a natural career progression when, for instance, a working engineer becomes a manager; some reflects career adjustment – a response to an initially poor career decision or to changing preferences; but some might also occur because of changes in the nature of employment opportunity. Can we use measures of occupational change as an indicator of problems in the functioning of the labour market (similar, for instance, to high employee turnover)? Two studies based on the US Panel Study of Income Dynamics (PSID), Kambourov and Manovskii (2008) and Parrado et al. (2007), provide evidence for high levels of occupational change over time and suggest that this is associated with a loss of occupation-specific skills, which in turns leads to poor relative wages.

This claim gives rise to a number of questions. First, how can we develop a measure of occupational change? In both of the above papers occupational change is identified as a change in survey respondents' occupational code; this measure relies on information on occupation at two time points. If one of these is wrong, and occupational coding is notoriously unreliable, the measure of change is wrong. Second, is there something specific to *occupational* change compared to the case of a change of job while remaining in the same occupation? The comparison of these two groups of changers is important if we want to analyse the causes and consequences of careers involving specifically occupational changes. Third, do the American findings apply equally to other countries? In this paper we use British and German panel data to assess the extent of occupational change while taking into account the possibility of measurement error involved in assessing such change. We then assess whether the work situation of occupational changes differs from job changes within the occupation, controlling as far as possible for the characteristics of those making such switches. Finally, we estimate the effects of the move in terms of wages and job satisfaction. Occupational movers might leave poor employment situations but arrive in a better job because they are now doing the work that suits them. In this case we cannot characterise high levels of occupational movement as a necessarily negative indicator of the state of the labour market.

2. The meaning and measurement of occupational change

2.1. The meaning of occupational change

It seems likely that switching occupation is harder in some respects than changing job while remaining in the same occupation, and therefore less likely to be voluntary. Kambourov and Manovskii (2008) argue that "a substantial amount of human capital may be destroyed upon switching occupation or industry" (2008: 41). Parrado et al. (2007) find that in the US occupational movement is associated with lower earnings, even controlling for selection effects. Using the British Household Panel Survey, Zangelidis (2008) shows positive returns to "occupational experience" (though also that these returns vary across occupations), implying that longevity in occupations pays. It is also possible that with the decline of internal labour markets career development depends on movement not only between jobs (Osterman 1994) but between occupations. The erosion of clearly defined paths is likely to lead to more wrong turnings for some, if greater opportunity for others. The drive to find a new occupation rather than a new job in the same occupation is therefore likely to result from a difficult current work situation, whether specific to the individual or to the state of the economy. In respect of the latter, it has for instance been argued that increasing global competition has encouraged employers to enforce more flexible work arrangements, whether through temporary contracts and part-time employment (Muffels 2008), or work intensification (Green 2006), either of which might generate greater dissatisfaction not only with a job but with the type of work done, and therefore more occupational turnover. The addition of a change in occupation to a change of job implies a greater underlying labour-market turbulence than can be inferred from data on job change alone.

In contrast to this general idea, some occupational change is clearly the result of natural career progression, for example as a result of promotion from a practical to a managerial position. We would obviously expect such moves to have positive outcomes in terms of wages but also perhaps of other indicators such as feelings of job security or the use of skills. Indeed, there is strong evidence that on average the quality of work is improving on a number of dimensions (e.g. Gallie 1996; Green 2006), which implies amongst other things increasing opportunity to make effective use of skills over the career. Some occupational movement will also be positive even without career progression. For instance, proponents of the 'flexicurity' thesis argue

that high job (and therefore potentially occupational) mobility is associated with high long-term employment security. In a comparative analysis Muffels and Luijkx (2008) find that in the 1990s the UK with its relatively liberal regime did in fact have high occupational turnover (where this is defined in terms of class, or groupings of occupations), with predominantly positive outcomes, in some contrast to continental countries such as Germany (2008: 153).

Overall, we consider the factors indicating a negative basis to occupational change as more compelling. For every teacher who reaches a managerial position, which requires exceptional ambition and the right circumstances, how many teachers drop into less demanding work because of the strains of their job, or family circumstances, or because a poor labour-market situation had initially pushed them into the wrong type of work? Only empirical analysis can tell, but it also has to be borne in mind that changing occupation will on average entail some loss of human capital, and is therefore a bigger decision than is a change of job.

2.2. The measurement of occupational change

Before we assess whether occupational change is broadly positive or negative we need to measure its extent. Is the phenomenon as widespread as suggested by the American studies? These reveal very considerable occupational (and industry-level) mobility in the US in the period examined (roughly the 1970s through to the mid-1990s). Kambourov and Manovskii (2008) find that 13% of workers change occupation, when measured at the one-digit level, 15% at two-digits and 18% at three. Parrado et al. (2007) get a 7-11% change at one digit level. However, the definition of occupational change they use is problematic. In both cases the authors define change as any occupational transition during the panel period. Generally this means year-to-year transitions as most people have periods of continuous employment. But for some people there might have been some time out of employment or of the labour market. Should this be included or not? Kambourov and Manovskii argue that excluding career breaks would underestimate change. However, the relationship between occupational change and breaks in employment probably varies by gender, as for women the change of occupation is often a secondary outcome of a different decision. As a result Kambourov and Manovskii use a sample of men only, but then losing important information: we see no obvious reason to exclude women if their data are available. In contrast, Parrado et al. include women but compensate by

excluding employment interruptions, which could distort the results. In our descriptive and regression analysis we include both men and women while also, at least in some of the descriptive analysis, including career breaks.

The second and more important methodological issue is that both of the above papers identify occupational change from differences in occupational codes over time. However, occupational coding is error-prone (Lynn and Sala 2006). This is a big enough problem at the cross-sectional level; in a panel it introduces spurious indicators of change and amplifies the problem. For instance, an IT specialist could be coded as such in one year then, although still doing the same work, as an electrical engineer the next. The claims for reliability in the two PSID-based papers derive from the fact that the original two-digit codes in the PSID were retrospectively recoded to three; in the process information about past and future jobs was used to increase the accuracy of the codes. But is this enough? Putting aside the possibility of some genuine change being wrongly discounted as a result, if jobs are misreported, incorrect or insufficient detail is given, or are perhaps subject to equally viable but different descriptions over time, it could be that in some cases no point in the triangulation process is unambiguous. In our analysis we restrict the definition of an occupational change to instances where a change of job is also reported, as in virtually all cases the former requires the latter. This procedure could lead to a minor problem insofar as respondents might interpret job change in different ways, a point we address in our analysis, but it will eliminate most spurious measures of change.

In sum, we accept the implication of the two studies referred to above that occupational change possibly reflects some sort of turbulence in the labour market, but suspect that the extent of this might be smaller than they suggest. On this point we also differ from Zangelidis (2008), who includes occupational and industry changes within a particular employer. Job changes while staying with the same employer are inherently interesting but difficult to identify because people might not themselves recognise such a change, for which reason we recode these cases as no-change.

Given the risk associated with an occupational move relative to a change of job with no occupational movement, the expectation is that the former will reflect negative aspects of employment in terms of wages, skill use, and perceived job quality. For instance, those who change occupations might be relatively overqualified in perhaps both the previous and new jobs and will have lower wages than either those

who change jobs with no switch of occupation or those who do not change at all. We test this descriptively first, then through analysis of the factors associated with occupational moves, and finally through models of the effect of the move on wages and satisfaction with the job.

3. Data and methods

3.1. Data

We use two panel datasets: the British Household Panel Survey (BHPS), and the German Socio-Economic Panel (GSOEP; the 'West' German sample only). The BHPS has 16 waves (1991-2006) and the GSOEP 23 (1984-2006). In our descriptive analysis we do not examine trends but pool waves in order to maximise the number of transitions we can analyse. We incorporate some restrictions, focussing primarily on employment spells across pairs of adjacent waves (though not taking account of possible employment changes over the year – e.g. a brief spell of unemployment). Our sample includes men and women of working age (16-64 for men and 16-59 for women) and working at least 10 hours a week at both time points. This last element means we include part-time workers in the analysis. Although we recognise that the transitions between part and full-time work can for some, especially for women, be as important as moves in and out of jobs or occupations, we do not examine them separately in our analysis.

3.2. Defining change in occupations

We argued above that measures of occupational change defined on the basis of change in occupational codes over time might result in spuriously high levels of movement. To be sure that a true occupational change has occurred we need explicit information on whether a job switch has occurred. In the BHPS we measure changes in job as those where the respondent says the job began at any time in the previous 12 months, based on the answer to the question: "*What was the date you started working in your present position? If you have been promoted or changed grades, please give me the date of that change. Otherwise please give me the date when you started doing the job you are doing now for your present employer*". If this date is after the date of the last interview we can record a job change. While working in a new position generally means with a new employer, this definition of job change also includes promotions

with the same employer. We keep the latter types of change separate in the descriptive analysis, and recode them as no change in the subsequent analysis.

In the GSOEP, job-change information comes from the following question: "*Has your job situation changed since the beginning of the [previous/current year]?*" This is then followed up by questions to elicit whether this change was a change of position with the same employer, to a new employer, or to self-employment. In the descriptive analysis we include all three types of change as indicators of job change.

In our models in the case of both countries we exclude the self-employed as wage information for this group is unreliable. Further, because a change of occupation is very unlikely to result from such moves, we code within-employer promotions as no change (though we do some robustness tests of our findings where we include both moves across and within employers).[1]

We identify occupational changes as a change of occupational code at the two-digit level of the International Standard Classification of Occupations (ISCO). Clearly, using either one or three levels would give different numbers, but the detail in two digits avoids both over and under-generalisation (see below). Table 1 compares 'apparent' change (denoted solely by a change on occupational code) with 'actual' change (a change in occupational code supported by a change in job).

TABLE 1 ABOUT HERE

The first two columns give results where the occupational change occurs with no break in employment. When the self-employed are included, the figures show that in Britain 29.0% of people appear to have a change of occupation as denoted by a change in occupational code but only 8.1% also declare a change in job. In Germany these figures are 11.9% and 3.4%, respectively. It is of note that excluding the self-employed (in either wave) makes only a marginal difference in either country. In contrast, the differences between real and actual changes are considerable. So is the

[1] Our procedure produces an indicator for *any* job change but there might have been more than one change of job since the previous wave, which, as stated above, we ignore. Our measure therefore slightly underestimates the number of changes, as Kambourov and Manovskii (2008), and Parrado et al. (2007), presumably did. It seems reasonable to argue that additional short-term switches (that is, within a single year) are of relatively little significance.

difference between the two countries. We would in fact expect more occupational change in Britain, given its more liberal employment structure, and indeed the degree of occupational change in Britain is more similar to the US (see e.g. Kambourov and Manovskii 2008) than to Germany. Nevertheless, the figure is certainly not insignificant in Germany either. The figures change only marginally when we exclude the self-employed.

The figures in the last column of Table 1 show the results for people who have a break between jobs of between one and five years. As in this case occupational changes almost certainly entail a job change, we treat the figures as actual occupational changes.[2] These can be considered as *additional* to the figures showing no break, if not precisely so. In Britain they make a marginal difference, in Germany virtually none (though in both cases this could vary by gender). Overall, we can say that the extent of occupational change as a whole is far less than can be inferred solely from figures of change in occupational codes in panel studies, but it is still large enough to require explanation – to which we now turn.

In all subsequent analysis we treat 'spurious' changes in occupation as non-changes,[3] focussing therefore on changes also identified by a change of job, and our interest shifts to a contrast between two types of job change: one where no change in occupation occurs and the other where it does. And because breaks in employment may occur for reasons not to do with the nature of an occupation, we exclude occupational moves that appear after an interruption in employment which is longer than 12 months.

A further issue is whether employee turnover makes a difference to our analysis. If we view a job as a set of tasks then job change can occur with or without a change of employer. If we were to find that job moves tend to be between employers and occupation moves tend not to be (or the other way round), then the

[2] We repeated this analysis for all countries in the European Community Household Panel, where occupations are classified in nine groups not directly comparable with the two-digit groups we use for the BHPS and GSOEP. When we include moves between employment and self-employment and count occupational moves as both with and without breaks in employment, the average year-on-year change in occupations where respondents have also changed job in the last 12 months is 3.8%. If we look only at change in occupational codes the apparent occupational change is exactly three times higher, at 14.4%. The highest percentage of apparent occupational change occurs in Belgium, with 22.5%, but this figure becomes 3.8% when we measure occupational moves based on changes in job.

[3] Perhaps the procedure of identifying occupational change solely on the basis of a change in codes identifies a different sort of person (or job) from where no job change occurs. Looking at Germany, there is no difference of note in the case for instance of gender, age, education or overqualification. Spurious change is far more similar to non-change than it is to either job change where no occupational movement occurs or where it does.

distinction between job and occupation moves would be secondary. Table 2 shows the distribution of change by whether a move involves a change of employer. There is a tendency in both countries for changes in occupation to be more strongly accompanied by a change of employer than job changes are, but the differences is not great. It is also of note that moves seem more likely to be associated with a change of employer in Germany than in Britain. The table additionally demonstrates that, though the use of three digits inevitably slightly increases the proportion of changes in occupation relative to job changes within the occupation, the level of detail in coding – 2 rather than 3-digit – does not make a notable difference to the distribution across and within employers.

TABLE 2 ABOUT HERE

Finally, though we do not show these figures in the table, the proportion of apparently voluntary to involuntary moves is also similar across the two types of change, and is again unaffected by the degree of coding detail. In Britain, quits are about twice as common as lay-offs in the period, while in Germany they are equally probable. In each country both quits and lay-offs are a little more likely in the case of changes in occupation than in cases of job moves where no change in occupation occurs.

From now we focus only on job switches which *are* accompanied by a change in employer. As movement within the firm reflects the operation of an internal labour market, often a form of promotion, we assume this is an easier transition, and our previous discussion is about the potential loss of occupation-specific capital as a result of a change in occupation.

3.3. Modelling the factors associated with change

We analyse the factors associated with job and occupational moves using Cox proportional hazard models in which the hazard rate of the j^{th} event ($h_j(t)$) is a function of time invariant ($\mathbf{X}\boldsymbol{\beta}_j$) and time-varying ($\mathbf{Z}\boldsymbol{\gamma}_j$) covariates:

$$h_j(t) = h_{0j}(t) \exp(\mathbf{X}\boldsymbol{\beta}_j + g_j(t)\, \mathbf{Z}\boldsymbol{\gamma}_j) \qquad j = 1, 2 \tag{1}$$

where $j = 1$ represents a move and $j = 2$ represents no move (Lee and Wang 2003; Blossfeld et al. 2007). We estimate models for the two types of failure: job moves within the occupation, and occupational moves. In both cases the comparison group includes those who do not change job. However, in the former case the comparison group includes also those who change occupation; in the second case the comparison group includes also those who change job but remain within the same occupation. We consider these two mutually exclusive events as independent as we can assume that those workers who want to remain in the same occupation will not accept job offers in different occupations and vice versa.

How much of the change derives from personal characteristics (for instance, an inability to settle) rather than from the job situation? We tackle this problematic question through use of an indirect indicator of unmeasured ability and motivation. If such unmeasured characteristics are essentially time-invariant, we can quantify them by means of the individual fixed effects of a wage equation. People with high fixed effects are those who are paid higher wages than we would expect given their characteristics included in the wage equation, while those with low fixed effects are those who are paid lower wages than we would expect given their measured characteristics. Hence, we can infer that workers with comparatively higher fixed effects will on average be more able, motivated, or productive.[4] We can then include the estimated fixed effects as additional individual characteristics in the Cox model ($\mathbf{X}\boldsymbol{\beta}_j$ of equation (1)).

In the first-stage wage equation, used to estimate the fixed effects, the dependent variable is the log of hourly wages. We include as explanatory variables age and its square, dummies for gender, marital status and presence of dependent children. Both marriage (Ferreira and Taylor 2009) and children are likely to inhibit job moves. We also include dummies for education groups as a final personal characteristic. In respect of the job we include job tenure, dummies for firm size, a dummy for non-permanent and one for part-time work. Longer tenure decreases the probability of job mobility (e.g. Dolton and Kidd 1998). We would equally expect people working with a fixed-term or other non-permanent contract to be more likely to change job, and it seems reasonable that part-time work might be similarly

[4] Indeed, in the data we use the fixed effects are correlated with education.

insecure. We also control for occupation by aggregating occupations containing common features such as degree of skill required, extent of autonomy, or managerial responsibility, following the Goldthorpe schema (Goldthorpe et al. 1987). Hence, we do not use changes across specific occupations to identify the fixed effects. We control for year-specific factors by means of time dummies.

In the Cox model the explanatory variables are the same as in the first-stage wage equation, but with the addition of three key variables. One is job satisfaction. If occupational change is less voluntary than a typical change of job where no change in occupation occurs, then we would expect job satisfaction to be lower prior to an occupational than in the case of other types of job move. Second, and more important, is a measure of job match, defined as whether the worker is overqualified for the current job. This can be interpreted as an indicator of whether skills are adequately utilised, but nevertheless interpretation is difficult. On the one hand, people who change occupations might be relatively highly educated and start off in positions which do not require the skills they have but from where advancement is expected. Thus changes in occupation might represent switches into better matched jobs and consequently improvement in wages (Sicherman 1991). On the other hand, some research suggests that the phenomenon of overqualification might alternatively describe poor work situations (Dolton and Vignoles 2000; Büchel and Mertens 2004; Brynin and Longhi 2009). Whatever their level of education, some people get locked into jobs which underutilise their skills, for instance because they have limited career prospects or, somewhat differently, career ambitions. If occupational change is a negative outcome we would expect overqualification to characterise occupational moves more than job moves within the occupation. Finally, we have the fixed effects estimated from the first-stage wage equation. These provide a measure of the impact of ability and motivation on the probability of a job change within and across occupations.

3.4. Modelling the effects of job and occupational moves

We next consider the effects of a change in job within the occupation and of an occupation move on changes in wages and job satisfaction. Following Böheim and Taylor (2007), we use a model in first differences to control for individual unobserved heterogeneity:

$$y_{jt} - y_{jt-1} = (\mathbf{X}_{jt} - \mathbf{X}_{jt-1})\boldsymbol{\beta}_j + (\mathbf{M}_{jt} - \mathbf{M}_{jt-1})\boldsymbol{\gamma}_j + (u_{jt} - u_{jt-1}) \quad (2)$$

where y_{jt} is either the log of individual hourly wages or a measure of job satisfaction in the job held at time *t*, while y_{jt-1} is the same variable in the job held the previous year (*t-1*). These will of course be different jobs for movers but the same job for those who do not move. When the dependent variable is the log of wages, the model, which analyses wage growth ($\ln y_{jt}/y_{jt-1}$), is estimated by OLS; when the dependent variable is a change in job satisfaction the model is estimated by an ordered logit. We use as explanatory variables in $\mathbf{X}_{jt}$ and $\mathbf{X}_{jt-1}$ a dummy for whether married; in respect of the job we include dummies for Goldthorpe occupation groups, firm size, non-permanent job, part-timers, whether the workers is overqualified, plus years of job tenure. Finally, $(\mathbf{M}_{jt} - \mathbf{M}_{jt-1})$ includes a dummy for job movers who remain within the same occupation, and a dummy for occupational movers. The comparison group is those who were in the same job in both *t-1* and *t*.

There might be a potential endogeneity problem here due to the fact that those we observe changing job or occupation are those who accepted a new job presumably on the basis of some calculation of the relative merits of the move, and who hence could on average gain more from the change, if their calculation was correct, than those who decided not to move (but who might have been offered a new job). Hence, we might overestimate the gain from the move of itself. However, we are interested in the comparison between the two types of change (job and occupation), and whatever bias there is should be the same for both. Also, it is reasonable to suggest that there is less endogeneity in the satisfaction than in the wage equation because this is not part of the job offer and might not be easily predicted when the job is accepted. Parrado et al. (2007) use an instrumental approach but only for tenure because higher productivity workers would be both higher earners and less likely to change jobs. This is unlikely to be a problem in our models because rather than analysing the level of wages (as Parrado et al. 2007) we focus on year-to-year changes.

3.5. Data issues

Some explanatory variables require additional commentary as a result of the need for comparison across the two countries. In the case of education we use actual qualifications rather than years of education as we are sceptical that one year of

education in Britain is worth as one year of education in Germany. Also, in the labour market qualifications count more than length of education (e.g. Park 1999; Skalli 2007; Brynin and Longhi 2009). For comparability over time, we compute four education groups: 1. higher and further education, which includes first and higher degrees, nursing and other higher qualifications; 2. A-Levels or Abitur (upper school); 3. GCSE/O-Levels or Real Schule (lower school); and 4. low or no qualifications, which is used as reference group.

Measuring overqualification is more complex. In the GSOEP, the overqualification variable is derived from the question, "*What training is required for your job?*" This can then be compared to actual qualifications to derive indicators of matched, under, and overqualified workers (Büchel and Mertens 2004), though this is not the same as the standard specification based on years of education required for a job compared to actual years (e.g. Hartog 2000). No equivalent exists in the BHPS. Here we use what is called the 'average' method, computing the education typically required for a certain type of job, itself derived from 1991 to 2006 from the British quarterly Labour Force Survey (LFS). We compute the mode qualification for occupations in the LFS (at the 2-digit level of the Standard Occupation Classification; note that these differ from the ISCO codes used in the rest of the analysis), which can be interpreted as the qualification generally needed for the job. Once these data are merged into the BHPS by the same occupation codes, the computation of an overqualification dummy from comparison between qualifications needed and held is straightforward.

A measure of general job satisfaction exists in both datasets, but it is differently scaled. We rescale the 11-point GSOEP variable to the seven points of the BHPS scale and then for both countries construct a dummy which is one for those satisfied with their job (the first three points in the scale) and a similar dummy for dissatisfaction, the reference group being those who are neither satisfied nor dissatisfied. In the BHPS variables exist on the different dimensions of job satisfaction. We include these in both the descriptive analysis and the regressions. In contrast, additional to a general question on job satisfaction the GSOEP gives information on whether a new job is perceived to be better, worse, or the same as the previous job in respect of the type of work, pay, security, promotion prospects, and use of skills. These are clearly only available when there is a change in job. We use

this information to analyse descriptively the outcome of job and occupational changes in Germany.

4. Results

4.1. The factors associated with job and occupational moves

Does an occupational move differ in terms of either personal or job characteristics from a job move? We test this through the event history model described by equation (1). The results are presented in Table 3. In the first and third columns all people at risk of a change appear in the models however long they have been in the job prior to the change (the 'stock' models). In this case we include everybody although we have only restricted information on their circumstances prior to the time we first observe them in the survey (they are 'left-censored'). The model, however, corrects for years of job tenure. In the second 'flow' model we eliminate this left censorship by including in the analysis only those who have been observed entering the job during the period of the panel. The cost of this is that it creates a smaller and possibly more biased sample (e.g. by age).

Our main interest is in the job satisfaction, overqualification, and fixed effects parameters, so we note only the most distinctive outcomes of the controls. At least in the stock models job changes are more likely for older people in both countries, as are changes in occupation in Germany. However, in Britain the latter characterise younger people, in both the stock and flow models. This suggests an early career turbulence in this more liberal economic climate, which, as the female dummy shows, is more likely for women. The effects of education are inconsistent. On balance, though, education seems to reduce the probability of either type of move in Germany while in Britain it perhaps has a positive effect. Education is strongly correlated with occupation, as measured by the Goldthorpe classification. Here the effects are somewhat clearer, at least in Germany where both types of move are associated with higher occupational levels, but especially in the case of occupation changes. Thus, movement seems to be some sort of career enhancement. In Britain, very differently, occupational change is less likely than job change at the top of the occupational ladder at least when compared to those in semi or unskilled manual jobs. This suggests the reverse of Germany's orderly career progression through change of occupation. In fact, only in the case of routine non-manual (e.g. clerical) are the coefficients for

occupational change in Britain consistently positive. Such work seems slightly more likely to be associated with high turnover of jobs but more especially of occupation. Part-time work is perhaps surprisingly unlikely to produce change of either sort in either country, perhaps reflecting some underlying demand for part-time work, while a non-permanent job unsurprisingly is likely to, especially encouraging changes of occupation in Germany.

The three key variables appear at the bottom of each table. There is perhaps a slight difference between the two types of change on the basis of job satisfaction in Britain but none of the odds ratios are significant, while in Germany those satisfied with their current job are relatively likely to change job but not occupation. Those who are overqualified seem more likely to change occupation, especially in Germany, and less likely to change job within the occupation, but this effect is even stronger for underqualification in Germany (while it is unmeasurable in Britain). Thus people who are not matched by skills are especially likely to change their occupation. More clearly, the fixed effects are in both countries strongly negative for occupation changers and positive for job changes within the occupation. Insofar as this reflects ability and motivation then we can see that those who change occupation are marked by low levels of both. Finally, while overall there are some differences between the stock and flow models as regards the key variables these are quite slight.

TABLE 3 ABOUT HERE

As a sensitivity analysis to the above specification we also modeled the two types of move using alternative methods, first with a multinomial logit where the outcomes are effectively competing outcomes, and then alternatively using a two-stage procedure based on event history analysis to model the duration to any move followed by a logit to model whether the move is a job or an occupational move (see e.g. Uunk et al. 2005). Neither strategy changes our basic results, which we therefore do not show here. In sum, it appears that those who change occupation rather than just their job are less likely to be satisfied with their work than those who change job without a change of occupation, are not matched to their job by skill, and are relatively less able or motivated. They are in unsuitable work partly because they are the sorts of people

who end up in that type of work; in Britain they are likely to be young men in routine or unskilled work. Do they improve their situation after their move? If they do, this suggests that they are not inherently destined for poor jobs. In this case, even if occupational is an indicator of some labour-market turbulence, in time people find the sort of work they want.

4.2. The effects of job and occupational moves

Before looking at the models estimating the effect of a move, we present further descriptive statistics indicating whether people feel better off after a change in occupation compared to a change in job within the occupation. In Germany we have direct information based on subjective evaluations of the benefits of the change, on five dimensions. Such data do not exist in the BHPS, where we use instead whether job satisfaction goes up or down based on similar dimensions. The results are shown in Table 4. Taking Germany first, we see a slight tendency for polarisation of effects in the case of the type of work, pay, job security and career prospects, with both improvement and deterioration. There is overall slightly more improvement in circumstances after an occupation change than after a job change within the occupation, but also a slightly greater tendency for circumstances to worsen, resulting in a greater polarisation of outcomes. However, in the case of the use of skills, we see that those who change occupation experience a greater decline in the use of their skills than do other job changers. This suggests that while change tends to be beneficial, for a minority things worsen, and this is likelier for changes in occupation. This provides some direct evidence that occupation change is not always a matter of smooth career progression.

TABLE 4 ABOUT HERE

The results also show considerable polarisation in Britain. As in Germany, many of those who change either job or occupation see their level of satisfaction improved, while some suffer a deterioration, though with positive outcomes more obviously predominating. However, again as in Germany, the differential in favour of

positive effects in the case of use of skills is smaller for change of occupation than for change of job.

The descriptive analysis shows both positive and negative effects of change. How well do people in each category of change fare relative to non-changers, controlling for other factors? In Table 5 we present the results of a wage equation where the dependent variable represents growth in hourly wages, and of models of change in job satisfaction (measured on a 7-points scale). In both cases the explanatory variables are expressed in terms of differences. The central variables of interest, though, are the dummies for job changes within and across occupations.

TABLE 5 ABOUT HERE

We can see that in both countries both types of change lead to a wage increase, controlling for change in other factors, and that the wage increase of a job change within the same occupation is not statistically different from the wage increase of an occupational change. This result does not conform with the findings by Parrado et al. (2008) for the period they study in the US. It suggests that moves of occupation are towards better paying jobs, while staying pays less well. The beneficial effect of a change is confirmed by analysis where we replace change in log wages by changes in job satisfaction. The coefficients for changes are positive, significant, and large; but importantly, more for occupational than for job changes. Thus, while some lose out when they change occupations, most people gain. In respect of the categories of job satisfaction in Britain, those who change occupation have a higher increase in satisfaction overall, with work, and with hours, compared to those who change job but not occupation. This suggests that change is not related to improvement in terms of pay, promotion prospects, or job security so much, but might be more related to aspirations about the job (work) and work-life balance (hours).

Finally, we undertake a sensitivity analysis whereby we restrict these regressions to young people aged under 35. It is possible that what we are witnessing in the above results is normal career progression in the early stages of a career. However, the results for the main variables are not much different. In the case of wage change in Germany the coefficient for occupational change reduces somewhat

compared to the previous result but the difference between this and the coefficient for job change within the occupation still nowhere reaches statistical significance. For Britain, instead, both coefficients increase and the difference between the two becomes smaller both in absolute and relative terms. In the case of job satisfaction in Germany the differential remains fairly similar but now loses statistical significance. The results for Britain, instead, do not change.

4.3. National differences

We unsurprisingly see differences between the two countries analysed. There is more occupational turnover in Britain than in Germany. Germany provides a more stable platform not only for good job matches but good occupational matches. However, the factors driving change and the effects of change are similar in both countries. Theory suggests that labour market shocks should be managed either through wage adjustments, or employer-level numerical flexibility such as a straightforward reduction in jobs, or in increased functional flexibility, whereby work is controlled more efficiently. It is actually not easy to predict which route is more likely in each country. We can take Britain as Anglo-American, and Germany as 'continental European'. It is often argued that the more liberal regimes have adapted to various shocks to the economy, such as technological change and globalisation, through wage adjustments, leading to greater wage inequality, while economies with strong employment protection or benefit systems have adjusted through unemployment (Blau and Kahn 2002). But things are probably more complicated than this. In the case of relatively high benefits, workers can afford to be unemployed while waiting for better paying jobs, which, it has been argued, then induces the creation of more good jobs in order to attract them into work (Acemoglu 2001). It has also been argued that in Europe the adjustment has been not so much through unemployment as through the creation of greater job insecurity, giving form to a different from of inequality to the one based on wages (DiPrete 2006). So in the more protected labour markets there might be a widening polarisation between good and bad jobs, while economies which seem to offer 'flexicurity' do well in some ways, for instance in re-integrating workers into permanent employment after a gap (Muffels 2008). Overall this suggests that in some major respects the difference between liberal and less liberal economies might not be as great as expected. The parameter estimates presented in our regression tables are broadly similar in the two countries we analyse. From the

individual's point of view it makes some, but not very great difference, in which country he or she works.

5. Conclusions

We have suggested that movement between occupations reflects a loss of human capital which is likely to be driven by negative 'push' factors. People get locked into poor jobs which might create an incentive not only to change job but also the type of job undertaken. In this case, we would expect occupational turnover to reflect a relatively turbulent job market. Evidence from the US suggests that this is the case, though the rate of occupational turnover varies over time. However, it is difficult to make an unambiguous assessment of the extent of this turnover because occupational data are notoriously unreliable. We therefore restrict our measure of occupational turnover to change where there is additional evidence of a job change. We obtain far lower estimates of occupational turnover in Britain and Germany than in the American case as a result, though the rate is higher in Britain than in Germany.

Even though the rates of change are smaller than the earlier studies suggest they are far from insubstantial in either country, and so might indeed be an indicator of relatively turbulent labour-market conditions. The descriptive analysis suggests that though more people are better off after a change of job, a sizeable proportion in both countries seem worse off, and this polarisation seems greater for those who change occupation than for those who change job without switching occupations. This implies negative push factors (not necessarily loss of a job but poor working conditions, low pay, uncongenial work). Otherwise why would they change occupation?

The event history analysis suggests similarly negative factors surrounding changes in occupation, and more so than in the case of a change of job that does not result in moving occupation. In both countries such changes are linked to poor job matches and low levels of ability or motivation, even controlling for both education and occupation itself. However, this also suggests that factors specific to the individual, as indicated by the (proxy) measure of ability and motivation, are a major impetus to change occupations. It is possible that rather than reflecting an underlying turbulence in the labour market, poor workers are drawn not only to poor jobs but into jobs where they are indifferent to the type of activity undertaken, as denoted by

occupation. They thus switch occupations easily. This seems more likely to be the case in Germany than in Britain.

Perhaps contrary to this idea, the analysis of effects of the move shows that the change is on average beneficial, with those who change occupation generating a wage premium as high as those who change jobs with no change in occupation, and higher than the equivalent for those who do not move, while on average also gaining a significantly greater increase in job satisfaction than job changers and non-changers. We could conclude therefore that occupational changes might be rational choices related to an initial poor occupational decision but also to aspirations about the job and work-life balance. People enter jobs where they are doing the wrong sort of work, whether at the start of their career or later, and then get out.

The implication of the results is that the probability of being not only in the wrong job but the wrong type of job varies over time - though unlike in the American studies we do not examine trends. We would expect less promising times to result in more people doing work which they do not like or for which they are not suited. Our results implicitly bear this out. If in good times people end up changing occupation because of a poor decision made earlier or because at that time or in a particular place choice was limited, in good times they make adjustments and improve their situation. In bad times it is reasonable to suggest that this ability to correct a poor start is less likely to be the case.

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Table 1: Apparent and actual changes in occupation in Britain and Germany (percentages for two-digit occupations based on ISCO 2000)

	No employment break		With break
	Apparent change	*Actual change*	*Actual change*
Britain			
With self-employed	29.0	8.1	3.1
Without self-employed	29.4	8.6	2.7
Germany			
With self-employed	11.9	3.4	0.1
Without self-employed	11.8	3.2	0.1

Note: 'Apparent change' includes changes in occupational codes not identified by a change of job, while 'Actual change' identifies occupational moves that are related to job changes. 'With break' figures are not straightforwardly additional to the figures in the first two columns as they cover a longer period.

Table 2: Proportion of job and occupation changers who change employer

	No change	Job change within occupation	Job and occupational change	
Britain				
2-digit ISCO	*84.6*	*7.3*	*8.1*	*100%*
Same employer		42.1	30.9	
New employer		53.0	63.5	
Into self-employment		4.9	5.6	
		100%	100%	
3-digit ISCO	*84.6*	*6.1*	*9.3*	*100%*
Same employer		43.4	31.3	
New employer		51.3	63.4	
Into self-employment		5.3	5.3	
		100%	100%	
Germany				
2-digit ISCO	*92.8*	*3.8*	*3.4*	*100%*
Same employer		25.0	19.8	
New employer		65.2	70.7	
Into self-employment		9.8	9.4	
		100%	100%	
3-digit ISCO	*92.7*	*3.5*	*3.8*	*100%*
Same employer		27.8	19.8	
New employer		63.9	70.7	
Into self-employment		8.3	9.4	
		100%	100%	

Notes: 2-digit ISCO codes identify 26 different occupations, while 3-digit ISCO codes identify 113, some with a very small number of observations. The self-employed remaining self-employed are included in "same employer", while the self-employed moving into employment are included in "new employer".

Table 3a: Event history analysis for job and occupational moves in Britain

	Job Change		Occupation Change	
	Stock	Flow	Stock	Flow
Age	1.024*	0.994	0.942***	0.945***
	(0.014)	(0.016)	(0.011)	(0.013)
Age squared	1.000*	1.000	1.001***	1.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Female	1.220***	1.175***	0.943	0.918**
	(0.048)	(0.066)	(0.037)	(0.040)
Married	1.191***	1.160***	1.157***	1.112**
	(0.067)	(0.064)	(0.050)	(0.048)
Children aged 0-15	0.853***	0.848***	0.986	1.002
	(0.036)	(0.041)	(0.044)	(0.045)
Higher/Further Education	1.008	1.052	0.973	0.993
	(0.081)	(0.088)	(0.053)	(0.081)
Upper school	1.023	1.009	1.036	1.092
	(0.084)	(0.090)	(0.062)	(0.088)
Lower school	1.031	0.994	1.050	1.083
	(0.093)	(0.085)	(0.048)	(0.072)
High professional	1.012	1.094	0.668***	0.713***
	(0.076)	(0.089)	(0.061)	(0.062)
Lower professional	0.980	0.985	0.678***	0.696***
	(0.065)	(0.087)	(0.054)	(0.057)
Routine Non-manual	1.056	1.044	1.097	1.191**
	(0.076)	(0.089)	(0.068)	(0.082)
Personal service	1.138	1.171*	0.864*	0.875*
	(0.095)	(0.109)	(0.071)	(0.071)
Skilled	1.213***	1.137	0.729***	0.742***
	(0.091)	(0.090)	(0.045)	(0.063)
Firm Size 50-199	0.937	0.932	0.999	0.966
	(0.051)	(0.048)	(0.051)	(0.045)
Firm Size 200 and over	0.859***	0.842***	1.017	0.976
	(0.040)	(0.054)	(0.047)	(0.049)
Part-time	0.751***	0.743***	0.757***	0.778***
	(0.049)	(0.050)	(0.040)	(0.053)
Non-permanent	1.135*	1.301***	1.056	1.127**
	(0.075)	(0.082)	(0.056)	(0.060)
Satisfied with job	1.024	1.018	1.033	1.024
	(0.085)	(0.093)	(0.085)	(0.071)
Dissatisfied with job	1.006	0.997	0.976	0.914
	(0.096)	(0.120)	(0.094)	(0.086)
Overqualified	0.607***	0.609***	1.016	1.017
	(0.065)	(0.067)	(0.094)	(0.099)
Fixed Effect	1.398***	1.210***	0.768***	0.747***
	(0.099)	(0.079)	(0.046)	(0.046)
Time-varying: JobTenure	0.814***	0.666***	0.817***	0.824***
	(0.006)	(0.013)	(0.005)	(0.006)
Log likelihood	*-17676*	*-14686*	*-20801*	*-16149*
Observations	*60038*	*35683*	*57239*	*32793*

The table shows marginal effects, and bootstrapped standard errors in parenthesis; * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 3b: Event history analysis for job and occupational moves in Germany

	Job Change		Occupation Change	
	Stock	Flow	Stock	Flow
Age	1.068***	1.180***	1.112***	1.182***
	(0.017)	(0.038)	(0.020)	(0.044)
Age squared	0.999***	0.998***	0.998***	0.998***
	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.920*	1.009	1.256***	1.556***
	(0.042)	(0.098)	(0.063)	(0.171)
Married	1.092*	1.063	0.968	0.925
	(0.057)	(0.114)	(0.054)	(0.101)
Children aged 0-15	1.068***	1.180***	1.112***	1.182***
	(0.017)	(0.038)	(0.020)	(0.044)
Higher/further Education	0.565***	0.667	0.821	0.848
	(0.069)	(0.191)	(0.110)	(0.283)
Upper school	0.895**	1.191*	1.301***	1.507***
	(0.047)	(0.123)	(0.075)	(0.188)
Lower school	0.700***	0.723	0.913	1.018
	(0.069)	(0.180)	(0.090)	(0.258)
Higher professional	1.382***	1.303	1.696***	1.860***
	(0.112)	(0.220)	(0.153)	(0.360)
Lower professional	1.162**	1.336**	1.358***	1.391**
	(0.079)	(0.188)	(0.100)	(0.228)
Routine Non-manual	1.434***	1.795***	0.865	1.064
	(0.110)	(0.290)	(0.090)	(0.230)
Personal service	0.979	0.826	1.376***	1.549***
	(0.079)	(0.149)	(0.108)	(0.261)
Skilled	1.188***	1.382**	0.699***	0.670**
	(0.073)	(0.175)	(0.051)	(0.105)
Firm size (medium)	0.810***	0.824	0.942	1.121
	(0.044)	(0.100)	(0.057)	(0.153)
Firm size (large)	0.912*	1.071	1.138**	1.456***
	(0.046)	(0.117)	(0.064)	(0.187)
Part-time	0.416***	0.347***	0.438***	0.439***
	(0.028)	(0.054)	(0.033)	(0.072)
Non-permanent	1.594***	1.913***	1.907***	2.078***
	(0.092)	(0.243)	(0.119)	(0.292)
Satisfied with job	1.110**	1.253**	1.045	1.088
	(0.057)	(0.140)	(0.057)	(0.127)
Dissatisfied with job	1.029	1.185	1.047	1.006
	(0.083)	(0.201)	(0.086)	(0.182)
Overqualified	0.921	0.802*	1.177**	1.125
	(0.054)	(0.101)	(0.077)	(0.161)
Underqualified	0.862	0.921	1.524***	1.382
	(0.085)	(0.224)	(0.148)	(0.348)
Fixed effects	1.260***	1.619***	0.613***	0.604***
Time-varying: Job tenure	(0.080)	(0.210)	(0.040)	(0.083)
	0.972***	0.993***	0.964***	0.985***
	(0.003)	(0.002)	(0.004)	(0.003)
Log likelihood	-19748	-4218	-17105	-3472
Observations	84204	20857	87974	21995

The table shows marginal effects, and bootstrapped standard errors in parenthesis; * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 4: Change in satisfaction with the job

	Job change (within occupation)		Occupation change	
	Improved	Worsened	Improved	Worsened
Britain *Satisfaction with:*	41.7	35.9	47.6	30.0
Job overall	38.1	35.8	45.1	30.3
Work itself	45.8	28.7	45.8	26.0
Pay	41.3	30.5	43.5	27.8
Job security	48.8	25.3	51.0	24.6
Promotion prospects	39.2	33.1	43.3	28.2
Hours	41.7	35.9	47.6	30.0
Minimum number of changers	*1521*		*2042*	
Germany *Change in:*				
Type of work	48.9	7.9	56.0	11.6
Pay	54.3	16.6	54.9	19.5
Job security	31.5	10.6	38.1	10.7
Career prospects	34.7	10.4	40.2	12.5
Use of skills	36.8	13.4	35.5	23.1
Minimum number of changers	*3950*		*2863*	

In Britain the figures show the proportion of job and occupation movers for whom satisfaction with various aspects of the job has increased or worsened between the two years. In Germany the figures show the proportion of job and occupation movers saying various aspects of their job had got either better or worse. In both countries changes are restricted to those where there has been a change of employer.

Table 5a: Effects of job changes on wages (OLS) and job satisfaction (ordered logit), Britain

	Wages	Job Satisfaction					
		Overall	Promotion	Pay	Security	Work	Hours
Married	0.006	-0.164***	-0.073	-0.055	-0.007	-0.059*	-0.076**
	(0.005)	(0.035)	(0.059)	(0.035)	(0.034)	(0.035)	(0.035)
Children 0-15	-0.006	0.034	-0.062	0.011	-0.004	0.043	-0.028
	(0.004)	(0.028)	(0.047)	(0.027)	(0.027)	(0.028)	(0.027)
Higher	0.084***	0.280***	0.522***	0.189***	0.110***	0.268***	0.060
professional	(0.006)	(0.041)	(0.075)	(0.040)	(0.040)	(0.040)	(0.040)
Lower	0.074***	0.249***	0.440***	0.155***	0.075**	0.245***	0.138***
professional	(0.005)	(0.036)	(0.066)	(0.036)	(0.036)	(0.036)	(0.035)
Routine	0.041***	0.162***	0.326***	0.147***	0.040	0.142***	0.175***
	(0.005)	(0.037)	(0.067)	(0.036)	(0.036)	(0.037)	(0.036)
Personal	-0.011*	0.123***	0.182**	0.085**	0.055	0.087**	0.172***
service	(0.006)	(0.042)	(0.079)	(0.042)	(0.041)	(0.042)	(0.041)
Skilled	0.028***	0.181***	0.249***	0.094***	0.035	0.140***	0.061**
manual	(0.005)	(0.030)	(0.054)	(0.030)	(0.030)	(0.030)	(0.030)
Firm Size 50-199	0.027***	-0.064***	0.012	0.050**	0.001	-0.103***	-0.022
	(0.003)	(0.022)	(0.038)	(0.022)	(0.022)	(0.022)	(0.022)
Firm Size 200+	0.041***	-0.091***	0.092**	0.066***	0.038	-0.149***	0.036
	(0.004)	(0.024)	(0.041)	(0.024)	(0.024)	(0.024)	(0.023)
Part-time	0.069***	0.061**	-0.203***	0.073**	0.057*	0.046	0.286***
	(0.005)	(0.030)	(0.056)	(0.030)	(0.030)	(0.030)	(0.031)
Non-permanent	-0.040***	-0.176***	-0.609***	-0.040	-1.572***	-0.062*	-0.031
	(0.005)	(0.035)	(0.057)	(0.034)	(0.036)	(0.035)	(0.034)
Overqualified	-0.012***	0.013	0.012	-0.013	-0.029	0.030	0.038*
	(0.003)	(0.023)	(0.042)	(0.022)	(0.022)	(0.022)	(0.022)
Job Tenure	0.000	-0.022***	-0.023***	-0.014***	-0.011***	-0.015***	-0.010***
	(0.000)	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Job change (JC)	0.047***	0.733***	0.613***	0.672***	0.457***	0.465***	0.413***
	(0.005)	(0.037)	(0.064)	(0.036)	(0.036)	(0.036)	(0.036)
Occ change (OC)	0.044***	1.006***	0.717***	0.620***	0.533***	0.792***	0.516***
	(0.005)	(0.034)	(0.059)	(0.033)	(0.033)	(0.033)	(0.033)
Log likelihood		-103197	-43673	-114262	-111782	-105205	-111170
(Pseudo) R2	0.013	0.008	0.006	0.004	0.010	0.005	0.003
Observations	64288	64161	20449	64207	64031	64206	64224
Test JC = OC	*0.27*	*32.61***	*1.52*	*1.23*	*2.62*	*47.48***	*4.81***
Prob > F/ chi2	*0.602*	*0.000*	*0.217*	*0.268*	*0.106*	*0.000*	*0.028*

Robust standard errors in parenthesis; * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5b: Effects of job changes on wages (OLS) and job satisfaction (ordered logit), Germany

	Wages	Job Satisfaction
Married	0.01**	-0.11***
	(0.00)	(0.04)
Children 0-15	-0.00	-0.07***
	(0.00)	(0.03)
Higher professional	0.02**	0.30***
	(0.01)	(0.06)
Lower professional	0.01*	0.17***
	(0.01)	(0.05)
Routine non-manual	0.01	0.19***
	(0.01)	(0.07)
Personal service	0.00	0.15***
	(0.01)	(0.06)
Skilled manual	0.00	0.11**
	(0.01)	(0.05)
Job tenure	0.00*	-0.01**
	(0.00)	(0.01)
Small firm size	0.02***	0.03
	(0.01)	(0.04)
Medium firm size	0.03***	0.09**
	(0.01)	(0.04)
Part-time	0.01*	-0.06
	(0.01)	(0.04)
Non-permanent	-0.04***	-0.02
	(0.00)	(0.02)
Overqualified	-0.02***	-0.06
	(0.01)	(0.04)
Job change (JC)	0.06***	0.86***
	(0.01)	(0.07)
Occupation change (OC)	0.07***	1.07***
	(0.01)	(0.07)
Constant	0.04***	
Log likelihood		*-130856*
Observations	*103254*	*82554*
(Pseudo) R2	*0.01*	*< 0.01*
Test JC = OC	*0.18*	*0.67***
Prob > F/ chi2	*5.66*	*0.02*

Robust standard errors in parenthesis; * Significant at 10%, ** Significant at 5%, *** Significant at 1%